

## **Space Astronomy, NASA's Origins Program**

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### **Abstract**

Space astronomy allows access to wavelength regions that are not available to ground-based observatories. The Space Infrared Telescope Facility, (SIRTF) a precursor to the Origins missions, will be collecting and analyzing radiation emitted by phenomena in the near infrared part of the electromagnetic spectrum, 3-180 micron range and provide for imaging, photometry as well as spectroscopy. SIRTF will be launch in December 2001. The primary science themes are the detection and study of brown dwarfs and super-planets, protoplanetary and planetary debris disks, ultraluminous galaxies and active galactic nuclei, and deep surveys of the early universe. The detector arrays offer orders of magnitude improvements in capability over past infrared detectors.

Astronomical missions scheduled for 2005 and beyond are enabled through advanced technology development. The Space Interferometry Mission (SIM) will use optical interferometry technology, while The Next Generation Space Telescope (NGST) will require large, ultra-light, and deformable mirrors, and very sensitive instruments. SIM will determine the positions and distances of stars several hundred times more accurate than any previous program. This will allow SIM to probe nearby stars for Earth-sized planets. SIM will also pioneer a technique to block out the light of bright stars to take images of areas close in to the stars. NGST to be launched in 2007 will study how galaxies evolve, how stars and planetary systems form and evolve, and what the life cycle of matter is in the Universe.

SIRTF, SIM and NGST are part of NASA's Origins program. SIRTF and SIM are managed for NASA by the Jet Propulsion Laboratory (JPL), California Institute of Technology. NGST is managed by NASA's Goddard Space Flight Center.